AUTOMATIC GASLIGHT IGNITER/CONTROLLER AND BURNERS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of PPA Ser. No. 60/754,475 filed 2005 Dec. 28 by the present inventors.

FEDERALLY SPONSORED RESEARCH

[0002] Not applicable

SEQUENCE LISTING OR PROGRAM

[0003] Not applicable

BACKGROUND OF INVENTION

[0004] 1. Field of Invention

[0005] This invention pertains to automatic gaslight igniters/controllers and burners for use with indoor or outdoor automatic gaslights, including natural gas, propane and other fuels. Both open flame and mantle type burners are used and the igniter works with most existing gaslights manufactured or in operation today. The small size and flexibility of the physical unit, which can be configured in several ways to meet specific installation requirements, allows its use with most gas lights. Compressing the igniter, solenoid valve, burner and probe into an integrated unit that is as easy to change as a light bulb is an important feature of this invention. Direct wire probes and side ignition of an open flame burner further enhance the gaslight operation.

[0006] 1. Description of Prior Art

[0007] Automatic gas light igniters have been used with limited success for several years. U.S. Pat. No. 4,830,606 describes a unit that is operated from a solar charged battery. Problems with maintaining a charge in the battery are apparent. Also the design described in the referenced patent uses discrete components rather than a microprocessor and lacks the flexibility to meet many gaslight installation requirements. Previous igniter configurations have components that are distributed about the gaslight head, post, wall bracket and other locations. None can be changed without tools, as easily as changing a light bulb. U.S. Pat. No. 5,980,238 describes an igniter used with a mantle burner with many of the initial claims defining manual gaslight burners that have been used for more than 50 years. It defines an installation that uses an extra oversize section of pipe to extend the post height to house some of the igniter hardware but does not mention an integrated plug-in igniter/burner assembly that requires no extra housing.

BACKGROUND OF INVENTION—OBJECTS AND ADVANTAGES

[0008] Advantages and features of the Knightronix Knightlighter automatic igniter/controller for gas-lights include:

[0009] 1. Small igniter size; fits in the bottom of most gaslights or within a **3** inch post.

[0010] 2. Igniter/burner can be changed without tools as easily as replacing a light bulb.

[0011] 3. Direct wire probe requires no ceramic probe holder.

[0012] 4. Side ignition probe will not soot-up, even with propane.

[0013] 5. Igniter works with propane or natural gas.

[0014] 6. Optional brass or copper cover provides a heat shield and hides wires and solenoid valve.

[0015] 7. Igniter works with mantle or open flame burners.

[0016] 8. Battery models operate on a 6 VDC Battery with 4 AA alkaline batteries lasting over one year.

[0017] 9. The 24 VAC igniter operates on less than 100 milliamps of current while igniting and about 10 milliamps when quiescent.

[0018] 10. A restrictor orifice at the gas source shutoff valve limits gas flow to a safe level in case a gas-line is cut.

[0019] 11. Mantle powered solar charger generates enough power from lighted mantles to operate the igniter and maintain battery charge because of the low operating current of the igniter. Any other solar charging is a bonus.

[0020] A very significant advantage of the plug-in automatic igniter/burner is that it provides easy field maintenance by allowing the service person to change out a defective unit with a replacement unit without tools and then return the defective unit to the shop or manufacturer for repair. A manual burner can be plugged in to provide light until the automatic unit is re-installed.

[0021] Gaslight installations are distributed all over the country and world. It is not practical to send a trained maintenance technician out to the gaslight location to repair the unit. Even if a trained technician did go to the gaslight site, it is very difficult to work on a hard-mounted gaslight/burner with distributed components when it is very cold or hot or when it is windy, snowing or raining. By making the automatic igniter/burner pluggable and easily interchangeable in the field without tools, the maintenance problem is greatly reduced and manageable.

SUMMARY OF THE INVENTION

[0022] Accordingly it is the primary objective of the present invention to provide a small, low cost, flexible and reliable automatic gas light igniter/controller that can be used with most gaslight manufacturer's gaslights.

[0023] The basic igniter/controller is a microcontroller-based unit with electrical power provided by a low voltage 24 VAC source, from a transformer connected to the house 120 VAC, 60 Hz power. A Cypress CY7C 53120 neuron chip is used as the microcontroller, which can also be interfaced with a computer to control the gaslights remotely and individually, if desired. When operated outdoors, the primary objective of the igniter/controller is to ignite the gaslight when darkness occurs and turn the light off when daylight occurs, saving 50% on gas usage. The operation of the igniter/gaslight can also be controlled from a manual electrical switch, timer or remote control. A secondary objective of the controller is to turn off the gas if, for some